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Geopolitics of Climate Change in the Himalayas: A Comparative Study of India's and Nepal's Policies in the Region

Abstract:

The Himalayas, a critical global ecological and hydrological system, face escalating climate change impacts inextricably linked with the region's complex and often contentious geopolitics. This paper undertakes a comparative analysis of India's and Nepal's climate policies within this sensitive region, examining how geopolitical considerations influence their divergent strategies. It argues that while both nations confront shared threats, their responses are fundamentally shaped by differences in national scale, institutional capacity, development status, strategic priorities, and historical emissions profiles. India's approach emphasizes a dual focus on mitigation and adaptation, reflecting its regional power aspirations and larger economic base. In contrast, Nepal, as a highly vulnerable Least Developed Country with minimal historical emissions, understandably prioritizes adaptation, community resilience, and international support. The paper contends that policy comparison is significantly challenged by these national disparities, data asymmetries, conflicting strategic interests, and the delicate nature of bilateral relations, all set against a backdrop of broader regional power dynamics. Consequently, while comparative insights are valuable for building regional climate resilience, the paper concludes that the current geopolitical landscape and inherent methodological complexities demand nuanced, context-sensitive approaches. Effective transboundary cooperation and evidence-based policymaking, essential for the long-term sustainability of this fragile mountain system and its dependent populations, require a deep acknowledgement of these intricate realities rather than oversimplified comparisons.

Keywords:‘Himalayas’, ‘Climate Change’, ‘Geopolitics’, ‘India’, ‘Nepal’, ‘Climate Policy’, ‘Transboundary Issues’, ‘Water Security’.

1. Introduction: The Third Pole Under Increasing Pressure

The Himalayan Mountain range, referred to as the "Third Pole" because of its enormous cryosphericreserves, and a world ecological hotspot of the highest significance (ADB, 2023). Its mountainsummits are thesources of Asia's mighty river systems, including the Indus, Ganges, Brahmaputra,Yangtze,and Mekong, sustaining livelihoods for over 1.9 billion

persons downstream(Wester et al., 2019). But thismajestic ecosystem is most vulnerable. It comprises steep slopes, seismic activity,and outstanding biodiversity, it is highly susceptible to impacts of climate change, such asincreases in glacial melting, abnormal rainfall patterns, and an increased incidence of extremeweather events. Concurrently, the Himalayas hold immense geostrategic significance. Theyestablish natural barriers between emerging and powerful powers like China, India, Pakistan,Nepal, and Bhutan, and have in the past been battlegrounds of territorial conflicts and resourcescompetition, particularly for transboundary water (Fernando,2023). This confluence of deep ecologicalvulnerability and high geostrategic stakes make the Himalayan region a critical, butprecarious, nexus of the 21st century.

This vulnerability is starkly exposed in the face of accelerated climate change. In the recenthalf-century, the Himalayas have witnessed a sudden increase in extreme heat, a decline inextreme cold, and variable snowfall. The warming rate of the region far exceeds theglobal mean (Karki et al., 1970; IPCC, 2007), and the temperature is expected to rise by 3.5 to5.5°C by 2100 in the Hindu Kush Himalayan (HKH) region (Kumar et al., 2006), much higherthe Paris Agreement's 1.5°C goal was already surpassed globally in 2024 (WMO, 2024; NewIndian Express, 2024). Such quick warming is causing glaciers to recede dramatically—with a projected 50% loss in the HKH region under global warming of 2°C(ICIMOD, 2022). Vegetation to change patterns, crop cycles to get disrupted, new pests toarise, and freshwater supply from aquifers and streams to be in danger(Platt et al., 2020). The warming is more extreme with altitude, especially affectingBhutan, Nepal, and Himachal Pradesh (Karki et al., 1970).

The environmental crisis is heavily exacerbated by deep geopolitical tensions. TheHimalayan region is undergoing deep changes not only ecologically but alsopolitically, culturally, and linguistically due to these pressures (Gautam, 2012). Militarization threats,competitive and often uncontrolled expansion on the basis of unsolved border disputes (Pai, 2008), andlarge-scale geopolitical rivalries destabilize fragile environments, increase risks like flash floodsthrough glacial melting, threaten indigenous cultures, and intensify water wars, commonlyobstructingcooperative responses to these common crises (The Lowy Institute, 2018). The speedy glacier loss, with some of them already dead (stationary), such as the Himalayan Yala glacier, which is set to completely thaw by the year 2040. This highlights the alarming situation of this reality and further impacts local conditions, water resources, livelihoods, and regional stability, raising questions regarding how humanity reacted (Sri Lanka Guardian, 2025).

In this context, Climate Change Geopolitics raises a body of critical perspectives (Chaturvedi & Doyle, 2015). This is an uncertain and unstable connection between environmental stresses induced by climate change in the Himalayas and the policy responses, and state-to-state foreign affairs in accordance with power relationships, sharing this ecosystem.

> "...some of these multifaceted discourses of fear – that somehow remain open to political contestation and interrogation – are now being scaled up and upgraded by various regulatory agencies and alliances to the discourse of 'climate terror'? This discourse can only have counter-terror as its Other in order to completely erase the hope (the Other of fear) of re-ordering and regulating spaces and societies allegedly more vulnerable to climate change…" (ibid.: p 1)
>
> "In early June 2013, a report for the World Bank... was published against the backdrop of extreme monsoons causing havoc in various parts of the Indian Himalayas... The usual debate ensued between the environmentalists and government agencies over the precise nature of the calamity, with the former calling it 'manmade' and the latter describing it as 'natural'." (ibid.: p viii)

It examines how climate impacts, such as water scarcity, glacial lake outburst floods (GLOFs), altered river flows, and food security threats, influence national interests, security perceptions, and foreign policy. In return, it also discusses the way in which modern geopolitical realities like power disparities, mistrust,and sovereignty concerns, determine the willingness and capacity of Himalayan states to pursuecollaborative climate adaptation, mitigation, and sharing-of-data approaches. This disciplineacknowledges thatclimate change is not only an environmental issue but also a strong motivator andamplifier ofgeopolitical risk and opportunity in this extremely sensitive region.

A comparative study of India and Nepal offers a critical overview of the Himalayanclimate change geopolitics. Both countries have huge ecosystems and interdependent vulnerabilities like transboundary floods and water insecurity, but operate in several tremendously different national environments. India, the fifth largest economy (IMF, 2025), is a global power with significant abilities, while Nepal is a geographically small, relatively resource-poor economy, and the least developed country (LDC) (United Nations).

This contrast emphasizes the intricate regional climate action threats, especially in the form of nationalist attempts towards resource control, which tend to undermine the required

collective ecological actions, thus amplifying regional climate crisis exposure and further increasing geopolitical tensions (Kumar, 2022).

> "Although national boundaries cannot limit natural phenomena like rivers and mountains, counties always try to harvest economic and political benefits within their national boundaries. The lateral aspect of the international trajectory hampers the ecological cooperation among the nation-states of the same ecological zone." (ibid.: p 4)

This paper will proceed as follows: In Section Two, we will talk about how climate change is affecting the Himalayas and the environmental problems that India and Nepal both face. In Section Three, we will look at India's plan for dealing with climate change in the Himalayas. In Section Four, we will look at Nepal's weaknesses as a smaller, mountainous country, its ability to adapt, and its primary concerns and plans. Section Five will look at their diverse methods and critically look at how power differences, differing abilities and priorities, and big data gaps make it hard to work together. Section Six will talk about how these problems make it hard for countries and regions to work together on climate change. Section Seven ends by going over the main points again and giving ideas on how to make Himalayan climate cooperation better.

2. Methodology

This research used a qualitative method of studying the geopolitics of climate changewithin the Himalayas, with specific attention to the dyad India-Nepal, and to make a comparativeanalysis oftheir climate change practices, strategies, and policies. The comparativeanalysisdrew evidence primarilyfromkey policy documents such as Nepal's National Adaptation Program of Action(NAPA), Climate Change Policy (2019), Local Adaptation Plans for Action (LAPAs),National Adaptation Plan (NAP), and India's National Action Plan on Climate Change(NAPCC) and State Action Plans on Climate Change (SAPCCs). NationallyDetermined Contributions (NDCs) by both countries and related research articles and newspapers were also reviewed.

3. The Geopolitical Context of the Climate-Stressed Himalayas

The complex network of free states and historic rivalries in the Himalayas isincreasingly controlled by accelerating global climate change, itself a "threat multiplier"(Scheffran, 2008). Environmental stressors interact with and frequently combine with existinggeopolitical fault

lines. Certain prime climate impacts driving this trend are sped-up glacialmelt triggering GLOF risk and vulnerable river flows; unpredictable rain inducing floods,landslides, and droughts; and increasing frequency of extreme weather events, all of whichseriously impact water resources, agriculture, biodiversity, and human livelihoods.

3.1. India-Nepal Relations: Asymmetry, Interdependence, and Mistrust in a Changing Climate

The geopolitical backdrop of the Himalayan region is controlled by the complex andoften strained relations with its major immediate neighbours—primarily India, China, andPakistan—a history of movement marked byunsettled border conflicts, entrenched historicalanimosities and constant strategic competition. This has led to massive militarization andassertive state formation in an ecologically conscious and culturally diverse mountainrange, forcing other smaller Himalayan countries such as Nepal and Bhutan to adopt conservativediplomatic positions as they handle complex relations with their larger, more powerfulneighbors. Classic International Relations literature will tend to emphasize state-oriented securitydilemmas and possibility of interstate war, usually overlooking the underlying andinsidious "slow violence" inflicted on local ecosystems. Significantly,Indigenousand minoritized communities through mass infrastructure development, natural resource extraction,andthe cumulative impacts of global change, all of which are amplified by this broadest geopolitical rivalry (Davis et al., 2020).

3Within this charged regional context, the relationship between India and Nepal stands out forits unique blend of deep historical, cultural, and people-to-people interdependence(epitomized by the "Roti-Betti ka Rishta" or "bread and daughter relationship" due to crossborder weddings and an open border and persistent, significant asymmetries in scale, economicstrength, military capacity, and institutional capacity. While India is a major and influential power in south Asia, Nepal is a vulnerable and resource-poor country. The severe effects of global climate change are seriously threatening an already complex dynamic. Geopolitically, Nepal’s fate depends on the fate of its two closest rival neighbours, China and India, who are geopolitical competitors, economic powerhouses and distinct civilisational entities.

However, for Nepal, maintaining a delicate, neutral relationship with both is vital to its national security, economic prosperity and overall stability. Nepal formally follows a policy

of non-alignment and neutrality, seeking to derive economic benefits from giants without getting into competition with them. It maintains foreign neutrality with both neighbours.

India is concerned about China's rapidly growing economic and political influence in Nepal. This has been highlighted by events such as Nepal's unilateral announcement of a new political administrative map in may 2020, which included territory claimed by India (Bhattarai, 2021). India, in its "Himalayan Frontier Doctrine", which presents China as a major strategic and existential threat, is suspicious of Nepal's independent foreign policy manoeuvres and interprets its relations with Beijing as actions driven by China. In contrast, India's own "hegemonic ambitions", often perceived as "interventionist policies", and unwillingness to settle disputes through diplomatic means, have led Nepal to seek better relations with China as a means of reducing Indian influence, making it difficult for Nepal to maintain strategic balance.

The geopolitics between India and Nepal isborder dispute over the Kalapani origin of theLipulekh-Limpiadora region of Kalapani in northwestern Nepal. Thisdispute, which arose from differing interpretations of the 1815 Treaty of Sugauli over the specific source of the Kali River (which forms part of their border), has severely damaged their long-standing, though often tense, relationships. The concerns were further heightened following India's publication of a new political landscape in 2019the establishment of a strategic road linkthrough thedisputed region in 2020, both of which marked Kalapani to be within Indian territory.

Nepal objectedthese steps aggressively, at times blaming India for acting "on behalf of China," sinceIndia,in turn, had a tendency to view Nepal's aggressive reactions and its subsequent release of itsown newmap (including the disputed regions) as being under Beijing's control, interpretingepisode within the great power rivalry with China (The Geopolitics, 2022).This dynamic energy is supported by three fundamental building blocks: first, a solid convergence ofregional geopolitics and competing nationalisms—India's often based on myths of ancientcivilizational greatness, and Nepal's on a history of socio-political resistance toperceived Indian dominance; second, the undeniable "rise of China factor," where China'swider economic and diplomatic outreach provides Nepal with a concrete alternative to itshistorical and sometimes crippling dependence on India, a trend evident withsubstantial Indian strategic distrust; and third, the intrinsic "small state-bigstate

complexity, which produces a natural suspicion in Nepal regarding Indian intentionsand conduct, which tend to be regarded as dominating or overwhelming.

The current-day geopolitical relationship between Nepal and India is thus multifaceted,characterized by ongoing attempts to improve economic and development aidwhile simultaneously managing persistent and highly sensitive political issues, all occurringagainst the ominous background of increased US-China global rivalry and intense India-Chinaregional tensions (NatStrat, 2023). Outstanding work, naturally, is being done on connectivityprojects and, specifically, in hydropower cooperation, with India committing vast powerpurchasing and facilitating Nepal's export of energy to third countries like Bangladesh.

India's long-standing anxieties about Chinese influence in Nepaldirectly influence its policy decisions, including its policy not to purchase electricity generated byprojects involving major Chinese construction or financial involvement, compelling Nepal to seekalternative routes and markets. Such as the pending issue of Gurkha recruitment in the Indian Army under India's new short-term "Agniveer" program, the unresolved border dispute, and pending amendments to the 1950 Treaty of Peace and Friendship. In addition, Nepal's internal political factors, such as the emergence of new political trends and periods of inter-communal conflict, also shape bilateral relations, as stability in Nepal is vital to India's security interests.

The resulting growing economic interdependence is attempting to address traditional political sensitivities in a dynamic and complex regional geopolitical environment (ORF, 2021). Management of shared water resources, in the wider Ganges River basin and particularly with respect to transboundary rivers such as the Koshi, Gandak, and Mahakali, is a particularly contentious and controversial aspect of India-Nepal relations (Ahmed &Gaur, 2020). Nepal views the historic treaties on these rivers as unequal, according to which India has been receiving irrigation and flood control requirements unevenly. This has raised deep doubts about India's long-term intentions and has led to the growth of anti-India sentiments. On the other hand, India sees Nepal as preventing effective co-management of water to achieve domestic political gains.

Thus, an atmosphere of suspicion and mistrust of each other is created, which has undermined their partnership on water issues for decades. For Nepal, this is a complex geopolitical conflict, roiled by the competing ambitions of India and instability between China, where China's vast untapped hydropower potential will be the target of their

competition. India, drawing on historical economic, cultural and historical ties, is seeking to maintain its sphere of influence and access to clean energy sources, partly as a way to counter China's growing economic and infrastructure influence in its region. China, through its Belt and Road Initiative and first-class infrastructure investments, is expanding its reach into Nepal and potentially seeks to connect Nepali rivers to its growing energy markets (Sridharan et al., 2023). This intense rivalry puts enormous pressure on Nepal, which is simultaneously grappling with internal political unrest and administrative failure. India's reluctance to buypowerfromChinese-funded projects, aside from earlier political tensions, again complicates Nepal's efforts to balance such relations and exercise its own agency in managing its precious water resources.

3.2. Climate Change as a Geopolitical Driver

Climate change is further exacerbating the region's complex geopolitical vulnerabilities. Changes in river drainage and erratic rainfall further strain water-sharing arrangements. Unless disaster response, early warning and responsibility-sharing are organised in an integrated manner, the transboundary nature of disasters such as GLOF and flash floods may become highly politicised. Climate migration in the region may intensify, putting pressure on resources and potentially exacerbating security conflicts. As a result, states may "securitise" the problem, placing greater emphasis on unilateral security measures than on collaborative, community-led adaptation solutions.

4. India's Climate Policy Framework: National Ambitions and Himalayan Imperatives

India's climate policy approach is based on the stark vulnerability of the Himalayas, driven by national water security, livelihoods and strategic interests. The National Action Plan on Climate Change (NAPCC, 2008) and the following NDCs form the overall framework.At the centre of the Himalayas is the National Mission for Sustaining Himalayan Ecosystem (NMSHE) for the assessment of ecosystem health, understanding impacts, and developing adaptation strategies. Complementing these national missions, specific programmes like the **Indian Himalayas Climate Adaptation Programme (IHCAP)** play a crucial role in strengthening scientific and institutional capacities for climate adaptation across the Himalayan states. Other applicable missions include the National Water Mission (NWM), National Mission for a Green India (GIM), and National Mission on Sustainable Agriculture (NMSA). Ambitious targets of India's 2022 NDCs are emissions intensity reduction and renewable energy, with potentially far-reaching effects on Himalayan hydropower

development, the fulcrum of the mitigation strategy, if also extremely contentious due to social and environmental problems. Adaptation, with robust Disaster Risk Reduction (DRR) through the Disaster Management Act 2005 and by the National Disaster Management Authority (NDMA), is one of the key pillars, as seen in the Coalition for Disaster Resilient Infrastructure (CDRI). Institutional frameworks encompass the Ministry of Environment, Forest and Climate Change (MoEFCC) as the nodal ministry, with state governments playing significant roles regarding ground-level implementation through State Action Plans on Climate Change (SAPCCs). India's Himalayan climate policy is undeniably conditioned by its geopolitical context: its wish to be a regional power, the need to supply downstream water sources (particularly rivers such as the Brahmaputra that originate from Tibet's Tibetan Plateau), counterbalancing China's power (e.g., concerns regarding China's "Medog" super dam), ensuring energy security, and ensuring border stability in case of possible climate-induced displacement in the neighbouring areas.

5. Nepal's Climate Policy Framework: Vulnerability, Adaptation, and GeopoliticsNavigation

As an LDC with over 80% mountainous terrain, Nepal is exceptionally vulnerable to climatechange. Its policy response strongly focuses on adaptation, community resilience, andinternational assistance. Its central tools are its NDCs (initially in 2016, strengthenedsecond in 2020 to achieve net-zero by 2045, the National Adaptation Program of Action(NAPA, 2010), the 2011 Climate Change Policy (2019 amended), and the NationalAdaptation Plan (NAP, 2021-2050). One feature of Nepal's plan is the establishmentof Local Adaptation Plans for Action (LAPAs), a new bottom-up planning process(Maharjan & Maharjan, 2017; Gentle &Mainaly, 2024), and devotion to directsignificant climate finance (e.g., 80% targets) to the local level (GoN, 2021). Community-basedand Locally Led Adaptation (LLA) is most important, learning from Nepal's own experience of communitynatural resource management.Particular hazards covered include GLOFs and landslides (highlighted by incidents such asthe 16 August 2024 Thyanbo glacial lake outburst flood and 2021 Melamchi disaster; ICIMOD,2023; Down to Earth, 2024), food security threats (with agricultural dependency andreliance on India for inputs and stresses on water resources, and localgeopolitics. Institutionally, the Ministry of Forests and Environment (MoFE) is nodal withlocal governments taking on more responsibility under federalism, yet at times short-changingcapacity. It needs international help. Geopolitics of Nepal play an important rolein its climate policy and foreign policy: it

actively promotes the "mountain agenda" globallyto rally support and precisely balances Indian and Chinese relations to ensure maximum gainsfor its climate policy, where feasible, investigating trilateral cooperation. Pursuing climate financeand technical assistance is the cornerstone of its foreign policy.

6. India and Nepal Comparative Policy Study: Managing Inherent Complications

Conducting a simple comparative examination of India's and Nepal's Himalayan climate policy isplagued by internal complexities, aggravated by some differences in circumstances and geopoliticalsensitivities.

6.1. Data Asymmetry and Accessibility:A widespread lack of homogenous, high-resolution meteorological, hydrological, and glaciological data makes accurate comparisons difficult. Cross-border data sharing agreements, for strategically sensitive hydro-meteorological information, are often ad hoc, incomplete, or politically influenced. “Data nationalism” hinders access by independent scholars, which can make comprehensive assessments challenging.

6.2. Divergent National Priorities and Policy Framing: Although both countries suffer from climate risks, their national agendas and deliberative frameworks differ. India’s climate policy is often linked to broader development objectives, energy security (i.e., hydropower), with a strong priority given to mitigation. Nepal, on the other hand, due to its least developed country (LDC) status and high level of vulnerability, generally views climate change as an immediate threat to survival, requiring rapid adaptation and foreign financing. Definitions of "climate security" and "resilience" also vary, as they reflect national capacities and development patterns.

6.3. Geopolitical Sensitivity: In the geopolitical context, particularly the asymmetric power relations of past tense periods in India-Nepal relations, impedes open policy dialogue and unfettered data sharing. The growing strategic rivalry between India and China further complicates the issue, making it difficult to identify climate-specific factors in water or infrastructure policy resources.

6.4. Complexity of policy processes and implementation gaps: Both countries face several challenges in the effective implementation of policy objectives (“policy implementation gaps”). Many of these challenges can be addressed through collaboration and coordination by both countries. Using crude analogies to more advanced contextual analysis to facilitate

cross-border scientific collaboration (e.g., through neutral organizations such as ICIMOD) is key to constructive engagement.

7. Conclusion

The Himalaya lies at a critical epicentre of rising climate change and deep-rooted geopolitical dynamics, a reality clearly illustrated by the distinct, yet intertwined, climate policy trajectories of India and Nepal. This comparative study shows that their strategies are fundamentally differentiated by different national capacities, power asymmetries, strategic ambitions and historical emissions profiles. To manage regional leadership and a huge economy, India pursues a dual strategy incorporating ambitious mitigation targets as well as robust adaptation measures. In contrast, Nepal, facing extreme vulnerability despite its minimal contribution to global emissions, prioritises seeking international support to address immediate, existential threats such as adaptation, community resilience, GLOF and landslides.

Although both nations acknowledge the importance of the Himalaya, but these are coupled with deep national differences, historical ties and broader power contests, which pose significant challenges for straightforward comparative policy analysis. Issues such as data asymmetries, rival national agendas and the broader geopolitical sensitivities inherent in the region complicate any attempt at simple binaries. Acknowledging these inherent difficulties is not to admit futility, but to underscore the need for more nuanced, context-specific approaches to understanding and promoting effective climate action, taking into account each nation's unique political economy and implementation realities. The prevailing geopolitical setting, characterised by historical mistrust and evolving power dynamics, coupled with methodological constraints, demands moving beyond simple comparisons. Hence, overcoming these constraints and ultimately, such efforts are of utmost importance to bridge knowledge gaps and foster cross-border collaboration, which is essential to ensure the long-term sustainability of the fragile Himalayan ecosystem and the well-being of millions of people who depend on it.

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